

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-001107**Date Inspected:** 05-Jan-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

<b>CWI Name:</b>	ZPMC- Xu Bing, Sun Wei and Fu			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b> <b>N/A</b>

**Bridge No:** 34-0006**Component:** 114m, 89m and 77m Mock-up**Summary of Items Observed:**

On this date, the Caltrans Quality Assurance (QA) representative, John P. Tracy, conducted assessments while on site at Zhenhua Port Machinery Company (ZPMC) for Caltrans Project 04-0120F4-SAS. The following is the detailed review of the following observations:

Bay 1: Submerged Arc Weld (SAW) gantry welder is inactive. The #1 deck mock-up is inactive.

Bay 2 operations: The 77m mock-up has ongoing thermal operations. All but one of the diaphragm to plate attachment welds are completed on the exterior. The interior welds continue to be fabricated under Welding Procedure Specification (WPS) number - WPS-B-T-3312-TC-P4 for the Shielded Metal Arc Weld (SMAW) process. Plate to plate attachment welds for plates C to D, have ceramic preheat pads in place and are active for welding operation to begin on off shift under WPS-B-T-2232-TC-U4b-F for the Flux Core Arc Weld (FCAW) process. No welding operations were observed by the Caltrans representative.

**\*\* Note\*\*** The Caltrans representative, while in the process of his observations, asked for all active WPS number that were currently being utilized on the 77m mock-up assembly. This question was offered to the two Certified Welding Inspectors (CWI) and the three Quality Control (QC) technicians standing near the structure. After 20 minutes of debate amongst themselves, it became very clear to the Caltrans representative that the individuals did not know precisely which WPS's they were working to.

89m mock-up, MUSB-MA26-1 and -2 shear link assembly has resumed ongoing welding operations for weld numbers MUSB-MA26-3, -4, -5, and -6. The Caltrans representative noted that the ZPMC welder, Lei Lichao

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(053619) was extremely close to the maximum interpass limits of 230 degrees centigrade per WPS-B-T-2132. The CWI, Sun Wei, agreed and pulled the welder off. The melting temperature indicator that was being used by the ZPMC QC inspector had no identifiable temperature designation left on the indicator, either internal or external. When the Caltrans representative questioned these findings the CWI sent the QC inspector off to retrieve a new set of temperature indicators. He returned with new 110, 160, 200 and 230 degree centigrade melting temperature indicators.

89m MUSB-MA29 Cross Brace has had heat straightening operations performed and stiffener components that have been tack welded and have root passes already in place however, the component remains incomplete and inactive.

89m mock-up assembly continues to have tack weld operations ongoing. All of the completed diaphragm to plate tack welds for plates E, A and B had Dry Magnetic Particle Testing (DMT) inspections performed by ZPMC technician. The Caltrans representative observed the process and it appeared to be in accordance with the criteria set forth within contractual documents.

114m Upper Section mock-up has ZPMC worker carbon arc gouging eight separate rejected Ultrasonic Testing (UT) inspection defects on Plate B to Plate C attachment weld (MUC-MA106 B/C-3B) for CWR(CT)035. Plate A to B (MUC-MA106 B/C-4B) attachment weld, has four separate rejected Ultrasonic Testing (UT) inspection defects which are awaiting carbon arc gouging for CWR(CT)034.

114m Lower Section mock-up is active. The base metal repair for MUC-MA107 B/C-2B was completed and ZPMC QC inspectors performed DMT and straight beam UT on the repair area during off shift 01/04/2008. The Critical Weld Repair (CWR) number CWR(CT)032 began 01/04/2008 on evening shift under WPS-345-FCA-W-1G(1F)-repair. ZPMC welder Bai Wenming (040434) was placing fill passes into the joint. Temperature range for this procedure is narrow being 200 degrees centigrade for preheat up to a 230 degree maximum interpass temperature. ZPMC CWI Xu Bing and QC technician Tang Yajun are carefully monitoring the temperature with a laser pyrometer. The Caltrans noted that the pyrometer was providing unusually high readings (255-265 degrees centigrade) on the areas preceding the arc. ZPMC stopped the welder and the Caltrans representative obtained a 200 degree centigrade and a 232 degree centigrade Tempilstik brand temperature indicator. The 200 degree indicator melted yet the 232 degree indicator did not. The Caltrans representative questioned the QC technician and the CWI on these findings and they agreed that the pyrometer, while current in the calibration sticker, was not functioning properly. They elected to forgo the laser pyrometer and use only melting temperature indicators. CWR(CT)033 remains inactive with three separate area being excavated and cleaned. Areas appear to be in accordance with the criteria set forth within contractual documents and are awaiting weld repair,

Included below are digital pictures that support the observations recorded within this report.

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### Summary of Conversations:

At the completion of the above stated operations, the ZPMC Certified Welding Inspectors, Xu Bing, Sun Wei and Fu Guo Gang, reported that the parameters followed and their noted results were found to be in accordance with the criteria set forth within the contractual documents.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Tracy, John	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar, Robert	QA Reviewer

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